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Executive Summary

There is a clear national security demand for the Department of Defense (DoD) to maintain a strong technical workforce across the research, development, testing and engineering (RDT&E) spectrum as we continue to face increasing globalization and rapid technological changes in military and non-military fields alike. This need will not abate because of the economic challenges facing the nation and the DoD. The United States depends on innovative research and development to protect its citizens, advance our national interests, foster economic growth and prepares to meet the challenges of the future. The DoD is committed to protecting the warfighter's winning edge as globalization and the rapid pace of technology development threaten to erode the military effectiveness of the United States and allied forces. RDT&E activities create and advance scientific understanding of technologies relevant to national security and are the cornerstone of fielded and future military systems. The Department relies on the highly skilled and experienced scientists and engineers (S&Es) resident in the in-house laboratories and engineering centers responsible for execution of RDT&E activities to maintain our nation's scientific and technological edge. The DoD currently participates in Congressionally required Department-wide Human Capital Strategic Workforce Planning efforts to assess, evaluate and shape the workforce for the future and this report is intended to supplement those efforts with demographic information about the S&E workforce at the DoD laboratories.

The first DoD laboratory study was completed by the Institute for Defense Analysis (IDA) in 2009[1] with an update prepared by the Defense Laboratories Office (DLO) in 2011. By periodically reviewing and updating the information gathered on the S&Es in the laboratories, over time a clearer picture of the trends in workforce demographics will emerge giving decision- and policy-makers greater clarity about the impacts of budgets and macro scale policies on this important workforce.

The objective of this study is to update the previous reports from 2009 and 2011 with available data from 2013. The two primary tasks of the previous report remain here:

- Determine the size and composition of current civilian S&E workforce in DoD Science and Technology Reinvention Laboratories (STRLs, also known as "Demo" Labs), and
- Identify recent trends in the S&E workforce.

DoD Civilian S&E Workforce Composition

Population Size

The total size of the DoD civilian S&E workforce as of October 2013 is 107,860, which is a slight decrease from the population in 2011 of 108,703. In 2011 the number of S&Es employed at DoD laboratories was 36,788 increased by 4.4% to 38,413 and now represent almost 36% of all S&Es in the DoD.

[1] IDA Paper P-4469. The IDA report used data from 2008.

Age

Since 2011, the population of S&Es under 30 years of age has decreased from 17% of the total workforce to just over 12%. The largest population of S&Es in the labs is between the ages of 50-54 (19%) and nearly two-thirds of the workforce is over 40 years of age.

Education

As seen in earlier analyses, the DoD civilian S&Es with Bachelor's degrees represent the largest percentage of the workforce (57.5%). More than 26% have Master's degrees and slightly less than 6% hold Doctorates.

Race, Ethnicity and Gender

Since 2011, the DoD civilian S&E workforce has also become more racially and ethnically diverse. The percentage of S&Es identifying themselves as Asian or Pacific Islander has grown from 7% to over 9%; S&Es identifying themselves as Black or African American has grown from 4.6% to 5.9%; and S&Es identifying as Hispanic has grown from 4% to 4.8%.

The percentage of women in the DoD civilian S&E workforce increased significantly since 2011 with females now comprising 20% of the total civilian S&E population. Among women the most common occupations are General Engineering (11%), Electronics Engineering (9%) and Social Science (9%).

Trends in the DoD Laboratory S&E Workforce

Occupational Job Series

The following table updates the trends tracked in the 2011 report. In general, the size of the DoD laboratory workforce has grown since 2011, and that growth is reflected in the size of the most common occupations listed below.

Occupation	2008	2011	2013	Increase/Decrease 2011-2013	%Increase/Decrease 2011-2013
General Engineering	3,490	4,403	4,699	**296**	**6.7%**
Mechanical Engineering	5,292	5,703	6,021	**318**	**5.6%**
Aerospace Engineering	1,995	2,207	2,166	**-41**	**-1.9%**
Electrical Engineering	982	1,193	1,413	**220**	**18.4%**
Chemistry	744	873	804	**-69**	**-7.9%**
Operations Research	869	703	836	**133**	**18.9%**
Electronics Engineering	9,919	9,103	9,501	**398**	**4.4%**

Age and Education

As noted in the 2011 report, the median age of S&Es continues to increase as well as the education level of the workforce. In 2008 the median age of S&Es in DoD laboratories was 43.8, it increased to 44 in

2011, and in 2013 the median age has climbed to 46 years. While the number of S&Es over the age of 40 had grown throughout the 2000s, since 2008 the number of employees under the age of 40 has grown to over 37% of the workforce.

Gender

A clear trend in the workforce since 1998 has emerged, with women increasing their proportion of the lab population from 13.8% to 17.3%. Both the total number of female S&Es in DoD laboratories and their relative proportion of the whole population continued to increase.

Gender	%/N=	1998	2008	2011	2013
Male	%	86.2%	84.5%	83.2%	82.7%
	N=	27,540	29,805	30,607	31,764
Female	%	13.8%	15.5%	16.8%	17.3%
	N=	4,409	5,467	6,180	6,649

Methodology

This report analyzes DoD civilian Scientist and Engineer (S&E) personnel data obtained from the Defense Civilian Personnel Data System (DCPDS). The data used for this report were obtained as of October 2013 with support from the Defense Civilian Personnel Advisory Service (DCPAS). The data for each organization was identified by Unique Identification Code (UIC, for Army, Navy, and DoD personnel) or a Personnel Accounting System (PAS, for Air Force personnel) code that was provided to the Defense Laboratories Office (DLO) by Service personnel representatives.

The data shown here were gathered by DCPAS at the request of the DLO within the Office of the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)), in October 2013 in support of this biennial DoD laboratory civilian science and engineer workforce report. For this report, *Defense laboratory* is defined as an organization that is known as a Science and Technology Reinvention Laboratory, as defined in the National Defense Authorization Act of FY1995, (NDAA FY95), as amended. As with previous reports, the data captured the following information for each civilian S&E within the DoD, including Defense laboratories:

- Occupational Job Series
- Educational Level
- Age
- Race/Ethnicity
- Gender

The first step was the capture of information for all the S&Es within all of the DoD laboratories. Occupational job series not part of the focus of this study were filtered out to remain consistent with series used in the 2009 and 2011 reports. This process yielded the following data on the STRL's workforce:

- Total number of S&Es,
- Median age of S&Es,
- Age breakdown of S&Es by their defined ranges,
- Total number of S&Es in each occupational job series,
- Total number of S&Es in each educational level, and
- S&E gender and racial/ethnicity totals.

Once this data was checked for quality and accuracy, the next step was separation of information by Service and laboratory and provided the following information:

- Total number of S&Es by DoD laboratory,
- Total number of S&Es by Service in each occupational job series, and
- Gender composition of S&Es in the laboratories by Service

The final step was to gather the same laboratory workforce data gathered for the civilian S&Es within the entire DoD so laboratory workforce statistics could be compared to the entire DoD S&E population.

Population of Interest – The DoD Laboratory Civilian S&E Workforce

The primary population of interest for this report is the civilian S&Es in the DoD laboratories. As shown in figure 1, the DoD laboratories (listed below in Table 1) have a total 62,312 total employees, of which 38,413 are S&Es. For comparison, the total number of S&Es in the DoD is 107,860.

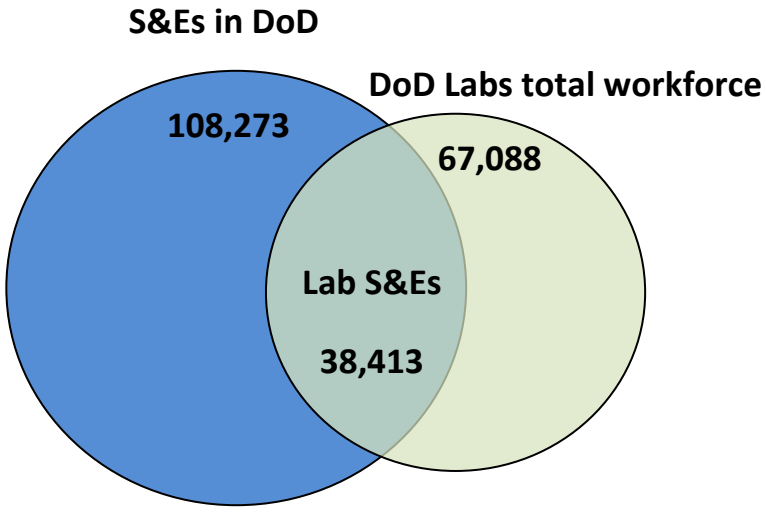
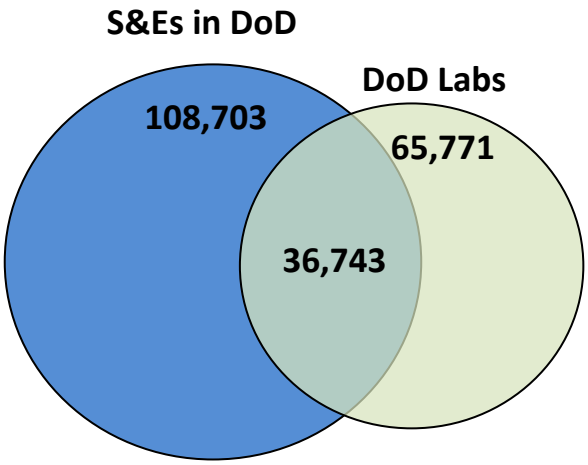
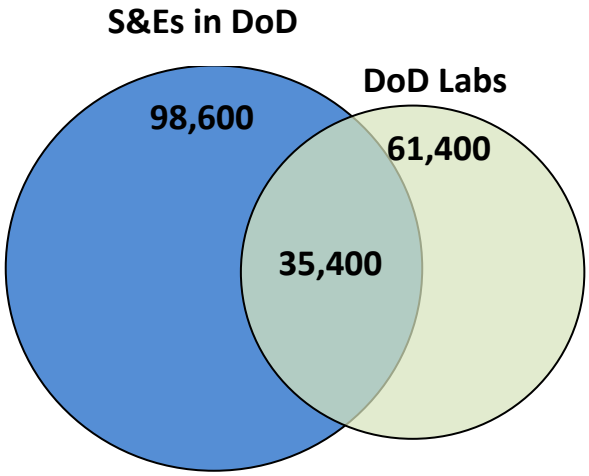


Figure 1 – Population of S&Es in DoD Labs (2013)



Population of S&Es in DoD Labs (2011)



Population of S&Es in DoD Labs (2008)

As listed in table 1, S&Es are defined by 84 job categories in accordance with the Office of Personnel Management (OPM) occupational code taxonomy. For the purposes of this and previous reports, the list of S&E occupational codes relevant to the DoD laboratories was narrowed down to the 70 DoD occupational codes highlighted in blue.

Code	Occupation	Code	Occupation	Code	Occupation
101	**Social Science**	602	Medical Officer	**896**	**Industrial Engineering**
110	**Economist**	630	Dietitian and Nutritionist	905	General Attorney
130	**Foreign Affairs**	633	Physical Therapist	1222	Patent Attorney
131	**International Relations**	644	Medical Technologist	**1301**	**General Physical Science**
132	**Intelligence**	662	Optometrist	**1306**	**Health Physics**
150	**Geography**	665	Speech Pathology and Audiology	**1310**	**Physics**
170	**History**	680	Dental Officer	**1313**	**Geophysics**
180	**Psychology**	690	Industrial Hygiene	**1315**	**Hydrology**
184	**Sociology**	701	Veterinary Medical Science	**1320**	**Chemistry**
190	**General Anthropology**	**801**	**General Engineering**	**1321**	**Metallurgy**
193	**Archeology**	**803**	**Safety Engineering**	**1330**	**Astronomy & Space Science**
401	**General Natural Resources Management & Biological Sciences**	**804**	**Fire Protection Engineering**	**1340**	**Meteorology**
403	**Microbiology**	**806**	**Materials Engineering**	**1350**	**Geology**
405	**Pharmacology**	**807**	**Landscape Architect**	**1360**	**Oceanography**
408	**Ecology**	**808**	**Architecture**	**1370**	**Cartography**
410	**Zoology**	**810**	**Civil Engineering**	**1372**	**Geodesy**
413	**Physiology**	**819**	**Environmental Engineering**	**1382**	**Food Technology**
414	**Entomology**	**830**	**Mechanical Engineering**	**1384**	**Textile Technology**
415	**Toxicology**	**840**	**Nuclear Engineering**	**1386**	**Photographic Technology**
434	**Plant Pathology**	**850**	**Electrical Engineering**	**1420**	**Archivist**
435	**Physiology**	**854**	**Computer Engineering**	1501	General Mathematics
457	**Soil Conservation**	**855**	**Electronics Engineering**	**1515**	**Operations Research**
460	**Forestry**	**858**	**Bioengineering & Biomedical Engineering**	**1520**	**Mathematics**
470	**Soil Science**	**861**	**Aerospace Engineering**	**1529**	**Mathematical Statistician**
471	**Agronomy**	**871**	**Naval Architecture**	**1530**	**Statistician**
482	**Fish Biology**	**880**	**Mining Engineer**	**1550**	**Computer Science**
486	**Wildlife Biology**	**890**	**Agricultural Engineering**	1740	Education Services
601	**General Health Science**	**893**	**Chemical Engineering**	1750	Instructional Systems

Table 1 – DoD S&E Occupation Codes

DoD-Wide Scientists and Engineers

The charts in Figure 2 below show the distribution of civilian S&Es by military Service in the DoD and in DoD laboratories.

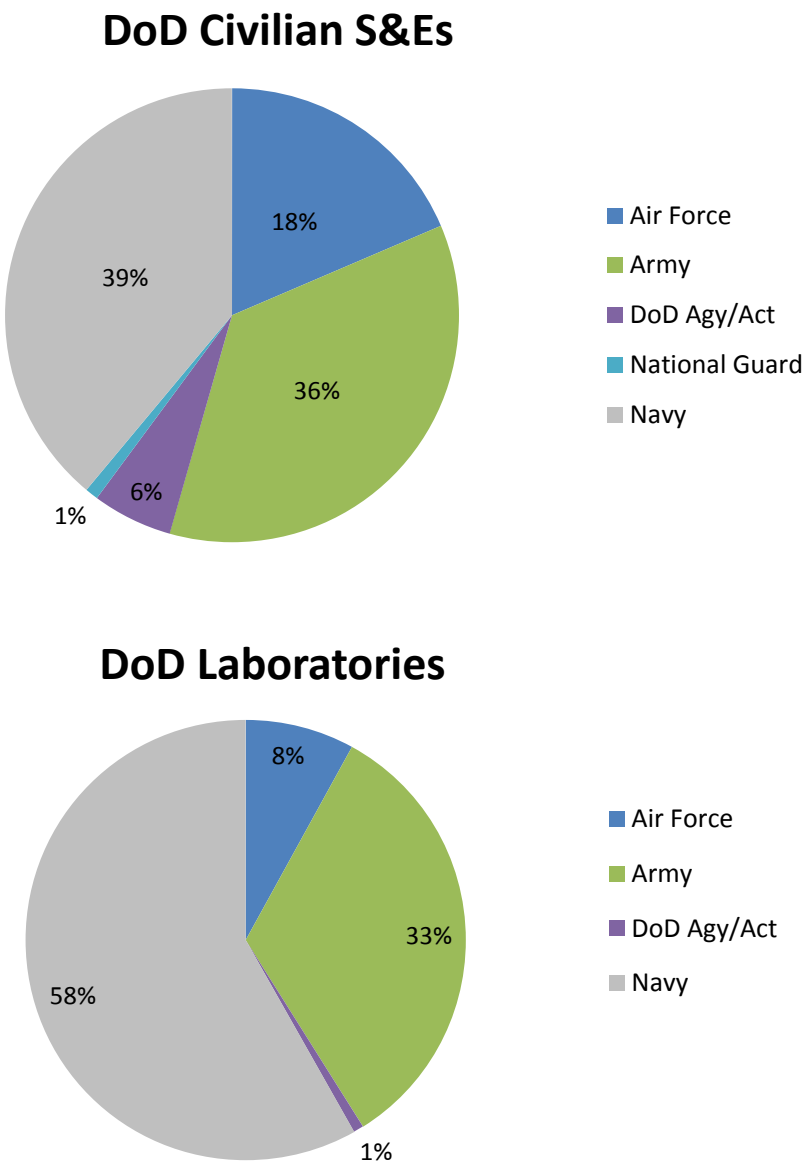


Figure 2 – Distribution of S&Es by Service

DoD Laboratories

Table 2 lists the DoD laboratories by primary location and the number of DoD civilian S&Es, as defined by Table 1, employed at each organization. The laboratories were identified by Uniform Identification Codes (UICs) and Personnel Accounting Symbol (PAS) codes which were provided to the DLO by the military Services. Actual personnel numbers at a given laboratory may vary slightly because UICs and PAS codes are generally used for accounting purposes rather than tracking of personnel related data. Also, the numbers only represent a snapshot in time for October 2013.

Table 2 – DoD Laboratories, Location and Total Employed S&Es		
Laboratory	**Primary Location**	**Number of S&Es**
Army		***11,541***
Aeromedical Research Lab	Fort Rucker, AL	18
Armament Research and Development Center (ARDEC)	Picatinny Arsenal	2,455
U.S. Army Center for Environmental Health Research (USACEHR)	Fort Detrick, MD	10
Communications & Electronics (CERDEC)	Aberdeen, MD	1,521
Army Research Institute of Environmental Medicine	Natick, MA	41
Army Research Laboratory (ARL)	Adelphi, MD	1,319
Aviation and Missile Research and Development Center (AMRDEC)	Redstone Arsenal, AL	2,503
Edgewood Chemical Biological Center (ECBC)	Aberdeen, MD	648
Engineer Research and Development Center (ERDC)	Vicksburg, MS	1,043
Medical Research and Materiel Command (MRMC)	Fort Detrick, MD	68
U.S. Army Medical Materiel Agency (USAMMA)	Fort Detrick, MD	17
U.S. Army Medical Materiel Development Activity (USAMMDA)	Fort Detrick, MD	34
U.S. Army Institute of Surgical Research	Fort Sam Houston, TX	39
Medical Research Institute of Infectious Disease	Fort Detrick, MD	97
Natick Soldier Research and Development Center (NSRDEC)	Natick, MA	368
Space & Missile Defense Technology Center (SMDTC)	Huntsville, AL	208
Tank Automotive Research and Development Center (TARDEC)	Warren, MI	1,073
Walter Reed Army Institute of Research (WRAIR)	Silver Spring, MD	79
Navy		***23,864***
Office of Naval Research (ONR)	Arlington, VA	173
Naval Health Research Center (NHRC)	San Diego, CA	25
Naval Medical Research Center (NMRC)	Bethesda, MD	32
Naval Research Laboratory (NRL)	Washington, DC, Stennis Space Center, MS, and Monterey, CA	1,602
Naval Undersea Warfare Center (NUWC) - HQ	Newport, RI	16
NUWC- Newport Division	Newport, RI	1,977
NUWC- Keyport Division	Keyport, WA	512
SPAWAR Systems Center (SSC) - Atlantic	Charleston, SC	1,393
SSC - Pacific	San Diego, CA	2,066
SPAWAR Space Field Activity	Chantilly, VA	32

Naval Medical Research Unit (NAMRU) – Wright Patterson AFB	**Dayton, OH**	**11**
NAMRU - San Antonio	**San Antonio, TX**	**5**
Naval Air Warfare Center (NAWC) Aircraft Division - Patuxent River	**Patuxent River, MD**	**3,284**
NAWC - Training Systems Division	**Orlando, FL**	**431**
NAWC Aircraft Division - Lakehurst	**Lakehurst, NJ**	**614**
NAWC Weapons Division - China Lake	**China Lake, CA**	**1,462**
NAWC Weapons Division - Point Mugu	**Point Mugu, CA**	**689**
Naval Surface Warfare Center (NSWC) - HQ	**Washington, DC**	**4**
NSWC- Carderock Division	**West Bethesda, MD**	**2,352**
NSWC- Dahlgren Division	**Dahlgren, VA**	**2,676**
NSWC- Pt. Hueneme Division	**Pt. Hueneme, CA**	**857**
NSWC- Indian Head Division	**Indian Head, MD**	**773**
NSWC- Corona Division	**Corona, CA**	**702**
NSWC- Panama Division	**Panama City, FL**	**866**
NSWC- Crane Division	**Crane, IN**	**1,310**
NSWC- EODTechDiv	**Indian Head, MD**	**99**
Air Force		***2,755***
Air Force Research Laboratory (AFRL) HQ	**Dayton, OH**	**122**
Air Force Office of Scientific Research (AFOSR)	**Arlington, VA**	**58**
AFRL - Aerospace Systems Directorate (RQ)	**Dayton, OH**	**498**
AFRL - Directed Energy Directorate (RD)	**Kirtland AFB, NM**	**198**
AFRL - Human Effectiveness Directorate (RH)	**Dayton, OH**	**302**
AFRL - Information Directorate (RI)	**Rome, NY**	**363**
AFRL - Materials & Manufacturing Directorate (RX)	**Dayton, OH**	**282**
AFRL - Munitions Directorate (RW)	**Eglin AFB, FL**	**187**
AFRL - Sensors Directorate (RY)	**Dayton, OH**	**521**
AFRL - Space Vehicles Directorate (RV)	**Kirtland AFB, NM**	**224**
Uniformed Services University of Health Sciences		***253***
Armed Forces Radiobiology Research Institute (AFRRI)	**Bethesda, MD**	**253**

The DoD Civilian S&E Workforce

The total DoD civilian S&E workforce in 2013 is comprised of 107,860 individuals and represents a decrease of about 1% from 2011. The DoD laboratories (listed in Table 2) employ 35,077 (32%) of those S&Es which is a decrease of 4.7% of lab S&E population and a decrease of 2% relative to total DoD S&E population. As shown in Figure 3 below, Electronics Engineering, Mechanical Engineering, General Engineering and Computer Science represent the largest occupations in DoD laboratories (accounting for 63% of all civilian S&Es in DoD's laboratories).

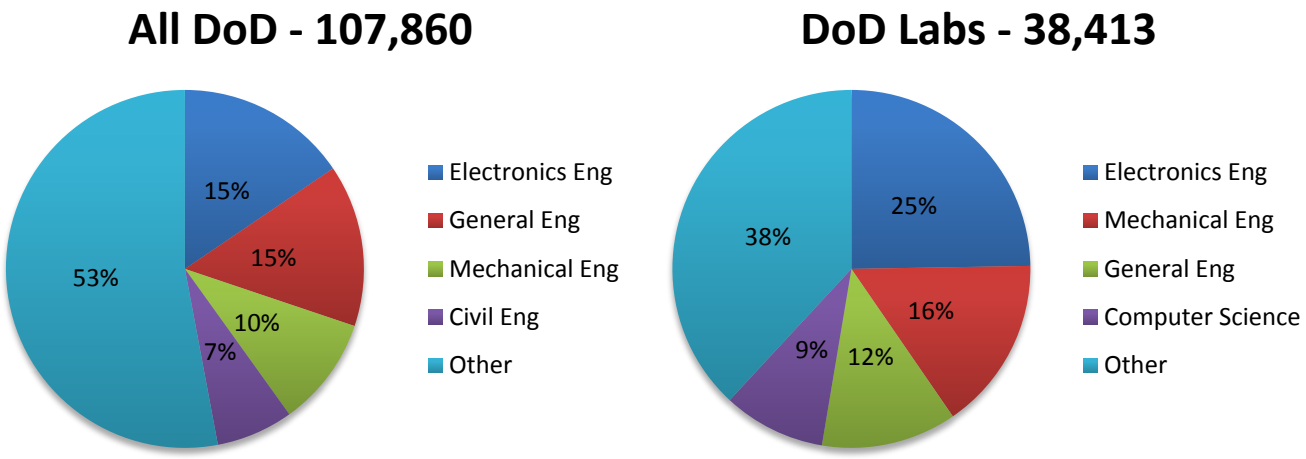


Figure 3 – Most Populous S&E Occupations in 2013

In 2008 the percentage of the U.S. S&E workforce aged 50 years or older grew to 27%, up from 26% in 2003 and only 18% in 1993. The median age of S&Es nation-wide in 2008 was 41 years old which grew from a median age of 37 in 1993.[2] The DoD laboratory workforce is significantly older than the national S&E workforce with 40% of DoD laboratory S&Es aged 50 or older (a median age of 46 and average age of 44.3). However, the age distribution of S&Es in the DoD and in the laboratories is bimodal as illustrated in Figure 4.

[2] National Science Foundation, "Science and Engineering Indicators 2012." http://www.nsf.gov/statistics/seind12/pdfstart.htm

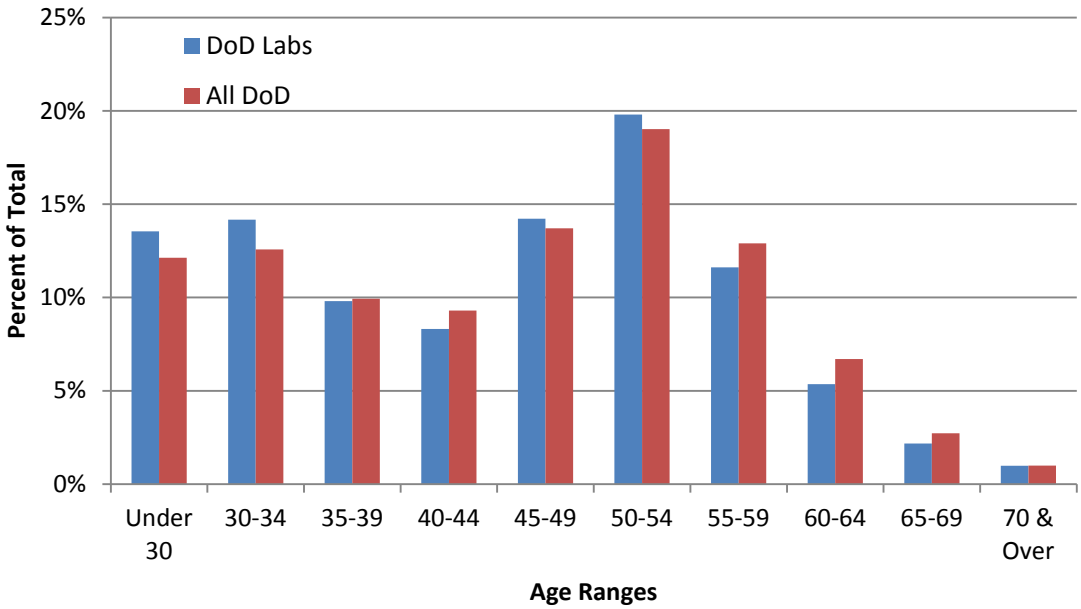


Figure 4 – Age distribution of DoD and DoD Lab S&E workforce in 2013

Scientists and engineers holding Bachelor's degree continue comprise the majority of civilians in DoD and the DoD laboratories with nearly 60% holding a Bachelor's degree as their highest degree. The number of DoD laboratory S&Es holding advanced degrees has increased since 2011 with Master's degree holders increasing from 26% to 27% and those S&Es having earned PhDs increasing from 9% to 10% of the total workforce. Figure 5 shows the educational degree level distribution in the DoD.

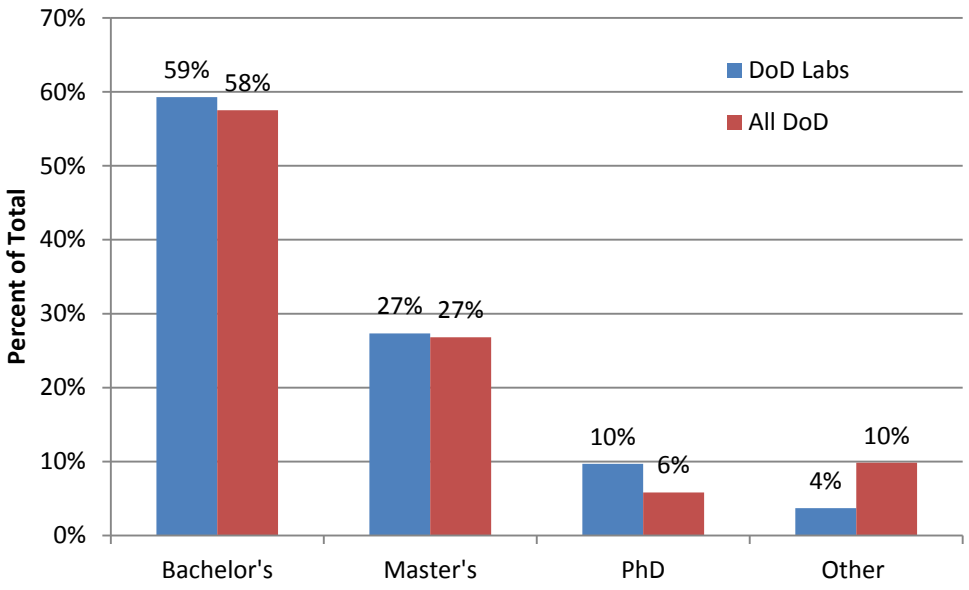


Figure 5 – DoD and DoD Laboratory Civilian S&E Workforce Educations Levels, 2013

Figure 6 shows the educational breakdown of degree holders within the military Services and the Uniformed Services University of the Health Sciences (USUHS).

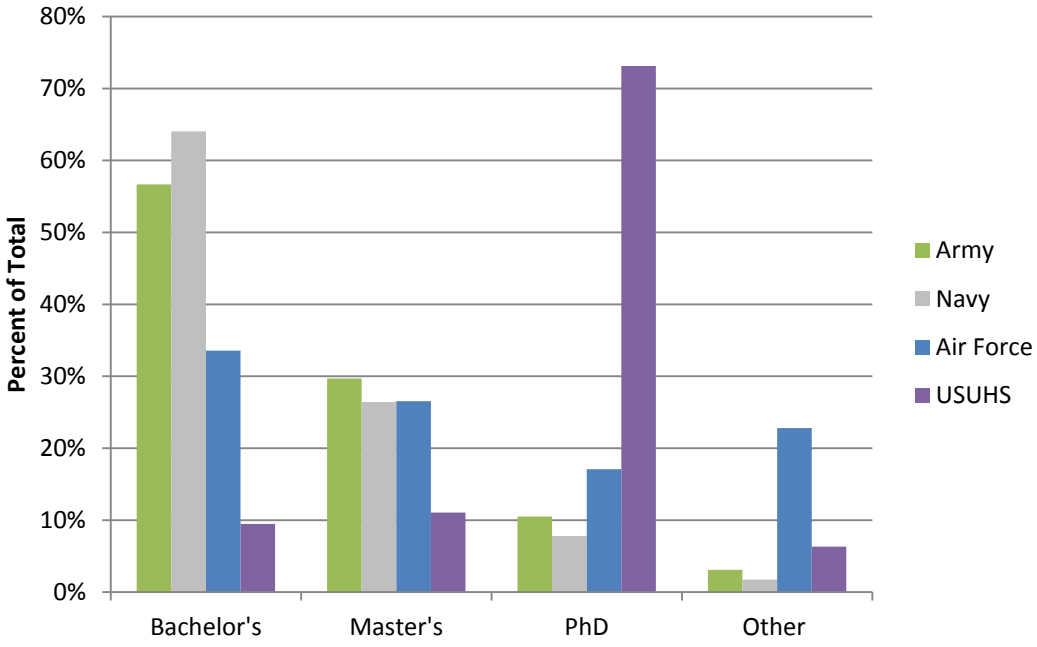


Figure 6 – DoD Laboratory S&E educational level by Service, 2013

In 2011 women comprised slightly less than 17% of the DoD laboratory workforce (figure 7). In 2013 the proportion increased to slightly more than 17%. Across the DoD, female S&Es were less than 20% of the workforce in 2011 and increased to more than 20% in 2013. Women were also younger than men on average in DoD laboratories, with an average age of 41.6 years compared to 44.9 years for men.

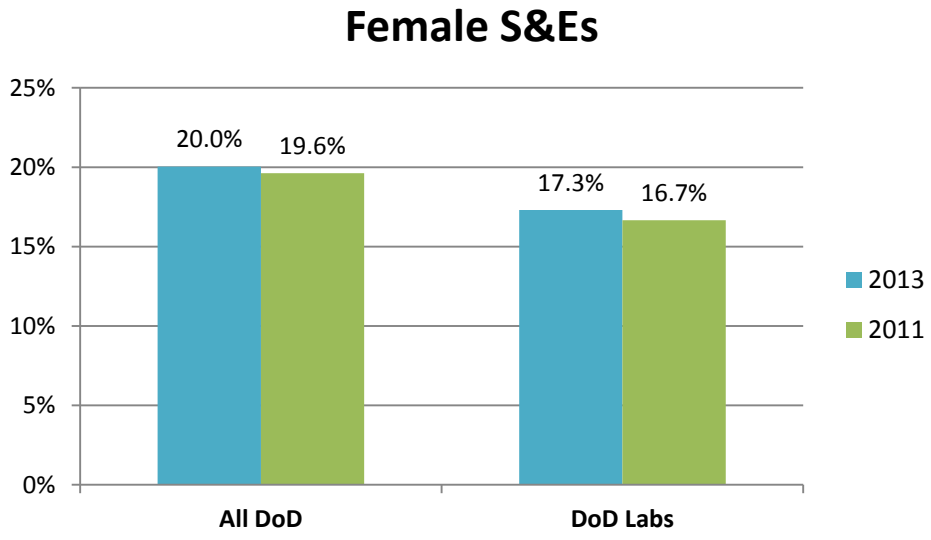


Figure 7 – Female S&Es in DoD

In 2013, S&Es identifying as Asian continue to be the most populous underrepresented minority in both the DoD as a whole and the DoD laboratories. The percentage of S&Es in DoD laboratories identifying as Black and Hispanic has also grown since 2011 from 4.6% to 5.0% and from 4.4% to 4.6%, respectively (Figure 8).

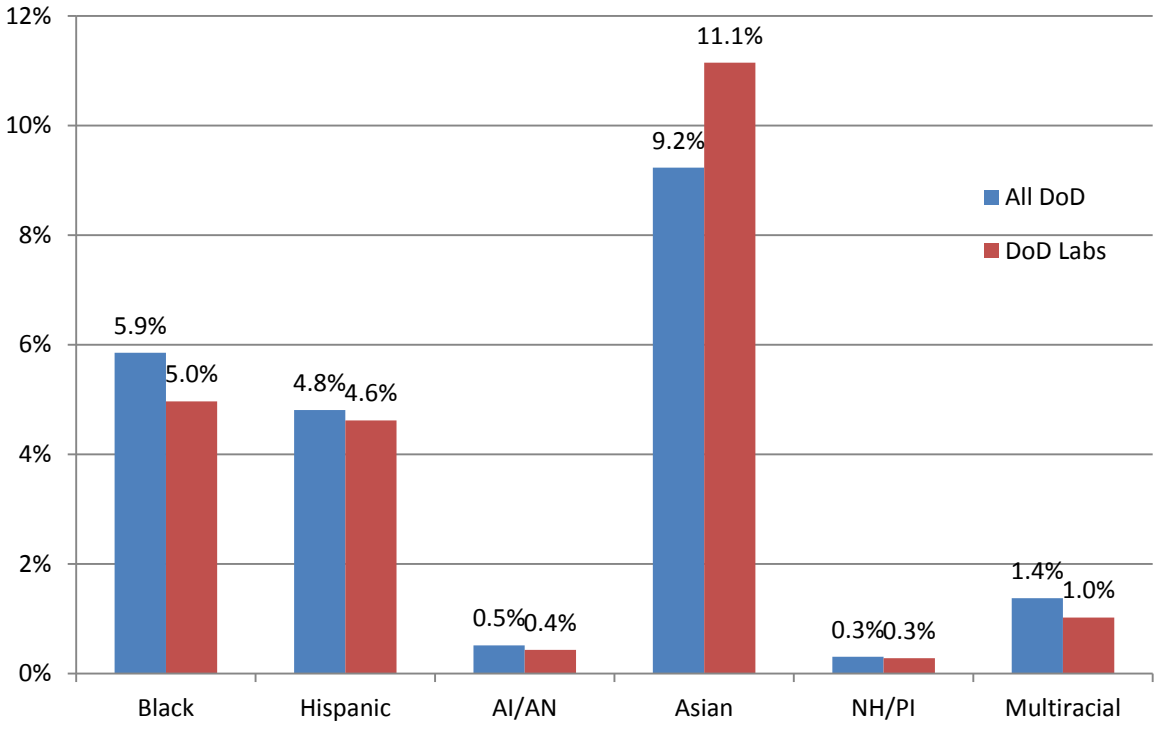


Figure 8 – Underrepresented Minority S&E Levels in DoD and DoD Labs in 2013 (AI/AN – American Indian/Alaskan Native; NH/PI – Native Hawaiian/Pacific Islander)

Trends in DoD Laboratory S&E Occupations: 2008-2013

Tables 3, 4 and 5 compare the top 10 civilian S&E occupations in the laboratories of the Army, Navy and Air Force in 2008, 2011 and 2013 (USUHS is omitted). The shaded areas highlight trends in selected occupations. In all three Services, the proportion of the most populous occupations decreased since 2011. While the relative position of the most populous occupations in the Army and Air Force remained mostly unchanged, the number of Aerospace Engineers in the Navy fell significantly between 2011 and 2013, from 1,201 to 453.

Table 3 – DoD Labs, Top 10 Occupational Series, 2013

Army			Navy			Air Force		
Occupation	Count	% Total	Occupation	Count	% Total	Occupation	Count	% Total
General Eng	2792	24.2%	Electronics Eng	7199	30.2%	Electronics Eng	682	24.8%
Mechanical Eng	1754	15.2%	Mechanical Eng	4127	17.3%	Aerospace Eng	351	12.7%
Electronics Eng	1620	14.0%	Computer Sci	2744	11.5%	General Eng	348	12.6%
Computer Eng	841	7.3%	General Eng	1559	6.5%	Materials Eng	229	8.3%
Computer Sci	628	5.4%	Computer Eng	1362	5.7%	Physics	202	7.3%
Aerospace Eng	601	5.2%	Aerospace Eng	1214	5.1%	Computer Sci	186	6.8%
Gen. Physical Sci	355	3.1%	Electrical Eng	1087	4.6%	Mechanical Eng	139	5.0%
Chemistry	345	3.0%	Physics	991	4.2%	Computer Eng	115	4.2%
Chemical Eng	320	2.8%	Ops Research	666	2.8%	Chemistry	81	2.9%
Civil Eng	298	2.6%	Mathematics	575	2.4%	Gen. Physical Sci	75	2.7%
Total	**9554**	**82.8%**	**Total**	**21524**	**90.2%**	**Total**	**2408**	**87.4%**

Table 4 – DoD Labs, Top 10 Occupational Series, 2011

Army			Navy			Air Force		
Occupation	Count	% Total	Occupation	Count	% Total	Occupation	Count	% Total
General Eng	2799	26.8%	Electronics Eng	6500	34.7%	Electronics Eng	727	28.8%
Electronics Eng	1876	18.0%	Mechanical Eng	3674	19.6%	Aerospace Eng	380	15.0%
Mechanical Eng	1873	17.9%	Computer Sci	2068	11.0%	General Eng	347	13.7%
Computer Eng	990	9.5%	General Eng	1257	6.7%	Materials Eng	241	9.5%
Computer Sci	806	7.7%	Aerospace Eng	1201	6.4%	Physics	222	8.8%
Aerospace Eng	626	6.0%	Computer Eng	1105	5.9%	Computer Sci	173	6.8%
Gen. Physical Sci	403	3.9%	Physics	996	5.3%	Mechanical Eng	155	6.1%
Chemistry	386	3.7%	Electrical Eng	853	4.6%	Computer Eng	112	4.4%
Chemical Eng	357	3.4%	Mathematics	544	2.9%	Psychology	86	3.4%
Civil Eng	319	3.1%	Ops Research	517	2.8%	Gen. Physical Sci	85	3.4%
Total	**10435**	**82.6%**	**Total**	**18715**	**89.5%**	**Total**	**2528**	**87.1%**

Table 5 – DoD Labs, Top 10 Occupational Series, 2008								
Army			**Navy**			**Air Force**		
Occupation	**Count**	**% Total**	**Occupation**	**Count**	**% Total**	**Occupation**	**Count**	**% Total**
General Eng	2202	21.1%	Electronics Eng	7257	38.8%	Electronics Eng	761	30.1%
Electronics Eng	1840	17.6%	Mechanical Eng	3516	18.8%	Aerospace Eng	357	14.1%
Mechanical Eng	1629	15.6%	Computer Sci	2278	12.2%	General Eng	258	10.2%
Computer Eng	858	8.2%	Computer Eng	1177	6.3%	Materials Eng	240	9.5%
Aerospace Eng	559	5.4%	Aerospace Eng	1075	5.7%	Physics	212	8.4%
Computer Sci	533	5.1%	General Eng	1026	5.5%	Computer Sci	144	5.7%
Gen. Physical Sci	435	4.2%	Physics	959	5.1%	Mechanical Eng	137	5.4%
Chemistry	340	3.3%	Electrical Eng	690	3.7%	Computer Eng	106	4.2%
Chemical Eng	333	3.2%	Mathematics	548	2.9%	Psychology	70	2.8%
Ops Research	305	2.9%	Ops Research	533	2.8%	Chemistry	65	2.6%
Total	**9034**	**80.9%**	**Total**	**19059**	**88.3%**	**Total**	**2350**	**88.8%**

Trends in the DoD Laboratory S&E Workforce

Figure 9 illustrates the bimodal age distribution of the S&E workforce for the top 12 occupational series resident in the DoD laboratories. As seen in previous reports, the distribution is generally bimodal in each occupational group.

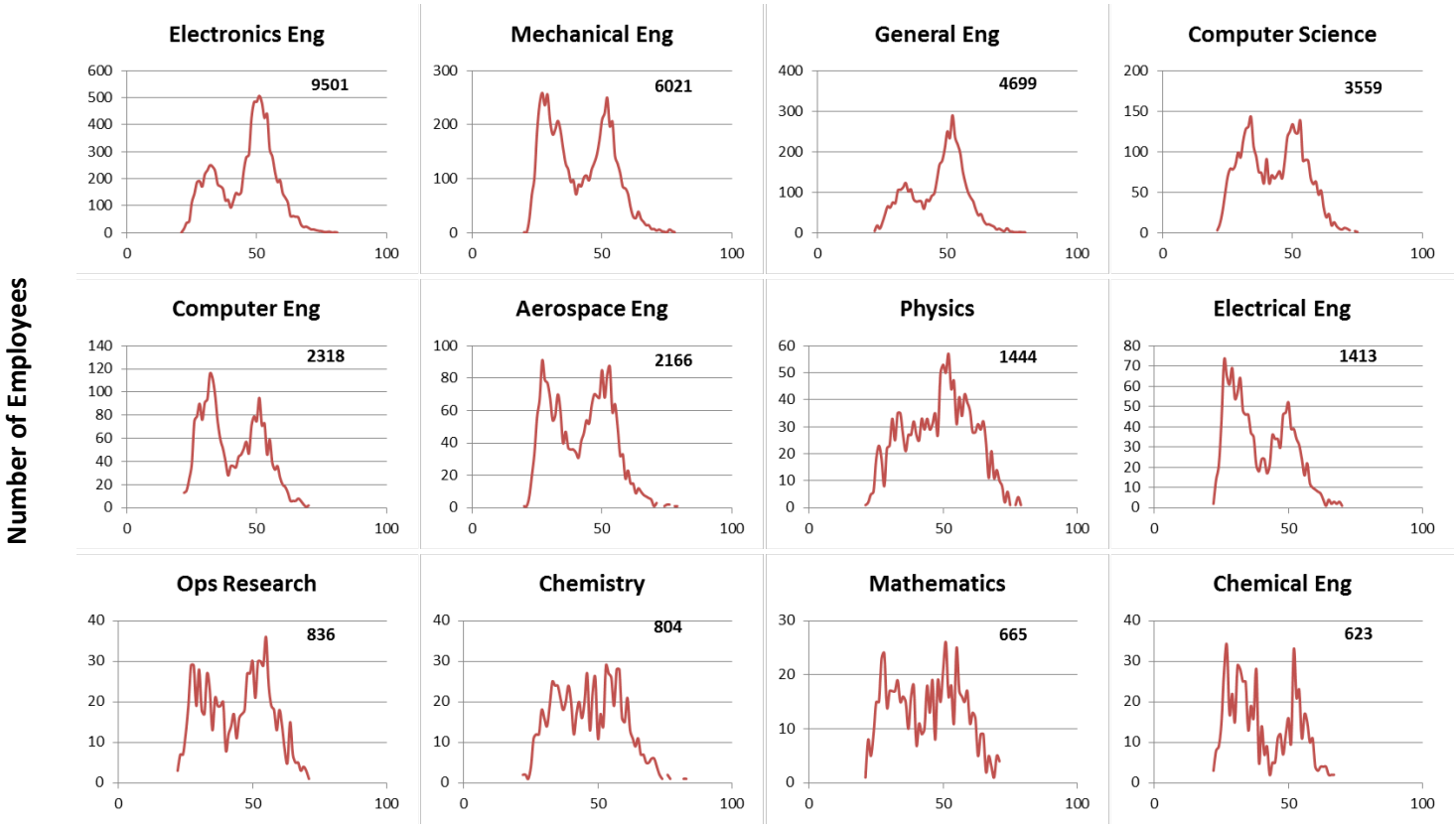


Figure 9 – Age Profiles of top 12 DoD Laboratory S&E Occupations

The charts in Figure 10 show the workforce profiles for the four most populous civilian S&E occupations at DoD laboratories by age and education. As seen for many engineering occupations, those with Bachelor's degrees represent the largest proportion of these occupations. All four occupations show increases in hiring, as indicated by the bimodal age distributions. Mechanical Engineering and Computer Science occupations have larger populations of employees under the age of 40 relative to Electronics and General Engineering.

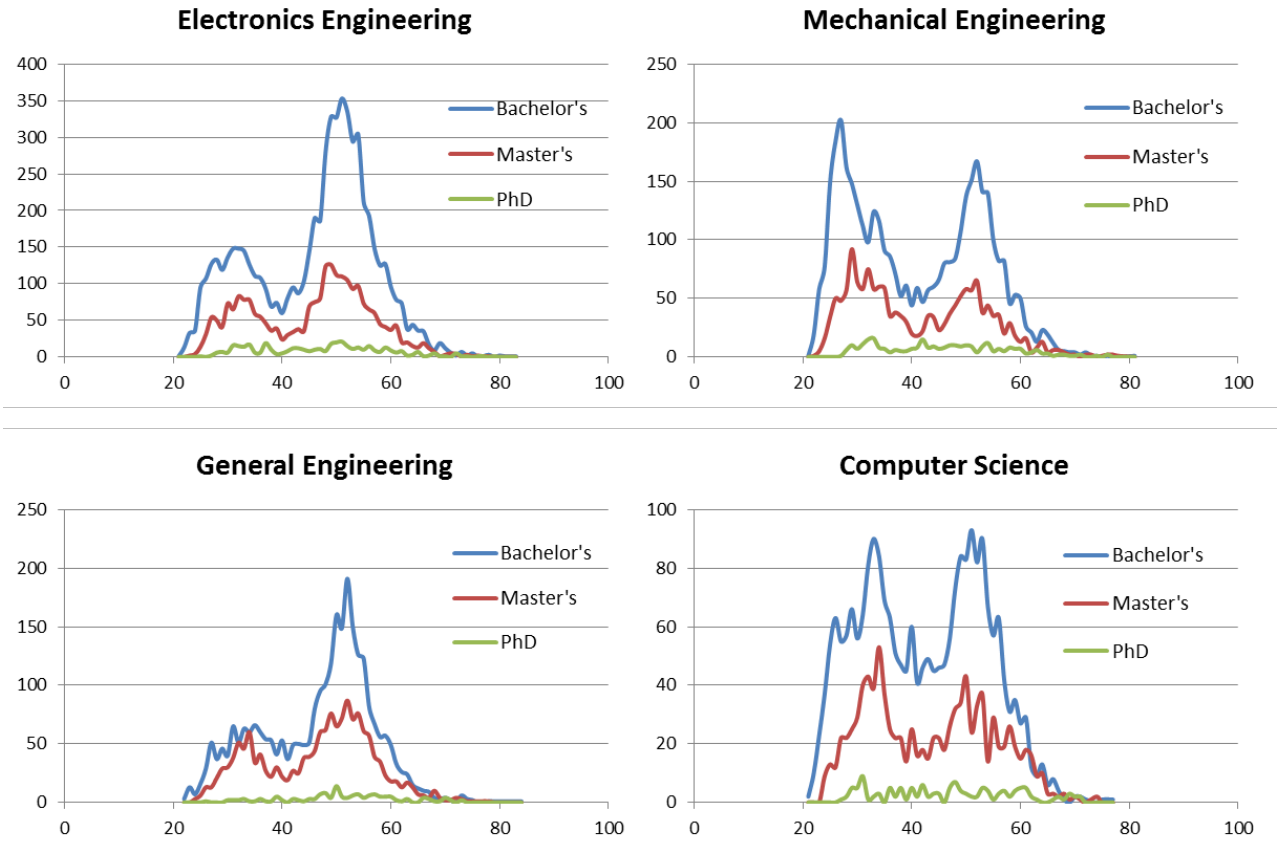


Figure 10 – Top 4 S&E Occupations in DoD Laboratories by Age and Level of Education, 2013

Figure 11 below shows the age profile of S&Es in DoD laboratories in 2008, 2011 and 2013. Though the median age of S&Es is slightly higher in 2013 than in 2008, in general the age distribution of the workforce has remained consistent since 2008.

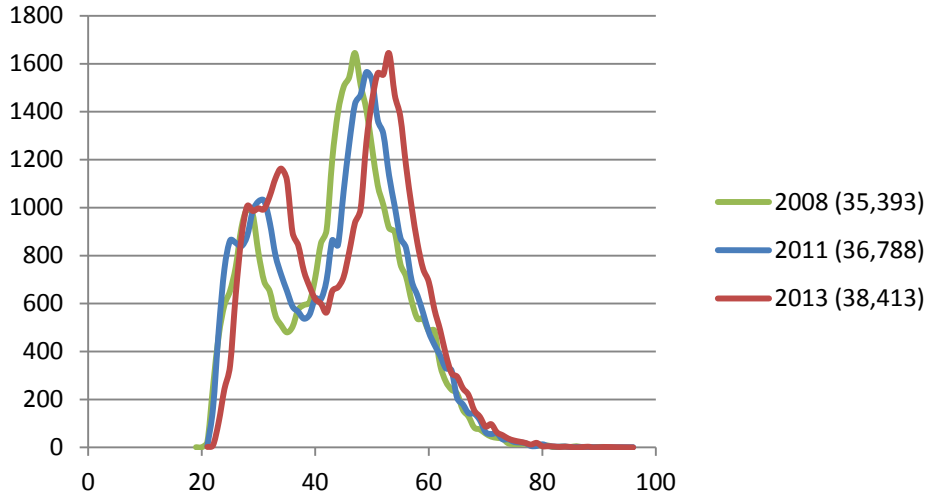


Figure 11 – Age Profile of DoD Laboratory S&Es

Racial, Ethnic and Gender Composition of DoD S&Es

This section provides data that may be useful in future consideration of race and gender. It should also be noted that no conclusions were made from this data. For historical perspective, the 2013 results are compared to 1998, 2008 and 2011 results to assess demographic trends.

Civilian S&E Workforce in DoD Laboratories

Table 5 compares the gender composition of the 38,413 S&Es in the DoD labs in 2013 with the relative gender compositions in 2011, 2008 and 1998.

Table 5 – Gender Composition of Civilian S&Es in DoD Labs in 1998, 2008, 2011 and 2013

Gender	1998	2008	2011	2013
Male	86.2%	84.5%	83.2%	82.7%
Female	13.8%	15.5%	16.8%	17.3%

Table 6 shows the racial and ethnic composition by gender for 2013 compared to 2011 and 2008. Again in 2013, there is slightly more diversity among the female workforce than the male workforce; however, racial and ethnic diversity continue to increase across the entire workforce.

Table 6 – Racial and Ethnic Diversity of Civilian S&Es in DoD Labs in 2008-2013 for the Total Population and by Gender

2013			
Racial/Ethnic Group	**Total**	**Male**	**Female**
White	79.1%	80.6%	72.3%
Asian	11.1%	10.8%	12.8%
Black	5.0%	4.1%	9.3%
Hispanic	4.6%	4.5%	5.2%
American Indian/Alaska Native	0.4%	0.4%	0.5%
Multiracial	1.0%	0.9%	1.5%
2011			
Racial/Ethnic Group	**Total**	**Male**	**Female**
White	79.3%	80.6%	73.3%
Asian	10.8%	10.5%	12.1%
Black	4.5%	3.7%	8.4%
Hispanic	4.1%	4.0%	4.5%
American Indian/Alaska Native	0.4%	0.4%	0.4%
2008			
Racial/Ethnic Group	**Total**	**Male**	**Female**
White	80.2%	81.5%	73.4%
Asian	11.0%	10.6%	13.1%
Black	4.3%	3.5%	8.7%
Hispanic	4.0%	4.0%	4.3%
American Indian/Alaska Native	0.5%	0.5%	0.5%

Table 7 shows the gender composition of each Service within the labs in 2013. Army labs have slightly more gender diversity than the DoD overall; the Air Force Research Lab has the lowest percentage of female civilian S&Es, while the USUHS has the largest.

Table 7 – Gender Composition of Civilian S&Es in DoD Labs in 2013 - Total Population by Service

Gender	Total	Army	Navy	Air Force	USUHS
Male	82.7%	81.0%	83.5%	85.4%	58.1%
Female	17.3%	19.0%	16.5%	14.6%	41.9%

Table 8 shows the education levels by gender in 2013. The distribution of educational attainment for men and women S&Es show no significant differences.

Table 8 – Educational Levels of Civilian S&Es in DoD Labs in 2013 - Total Population by Gender

Educational Level	Total	Male	Female
HS Grad	0.5%	0.5%	0.6%
Some College	0.9%	0.9%	1.0%
Bachelor's Degree	59.3%	59.7%	57.3%
Master's Degree	27.3%	26.9%	29.5%
Ph.D.	9.7%	9.6%	10.0%
Professional	0.8%	0.8%	0.7%

Table 9 lists the top S&E occupations (defined by having a population size of greater than 150) in the DoD laboratories by gender in 2013. The shaded areas in Table 9 indicate notably higher percentages of females in specific occupations (relative to the 17.3% female overall average).

Table 9 – Gender Mix of Top Civilian S&E Occupations in DoD Labs in 2013

Occupation	Population Size	Female	Male
Electronics Engineering	9501	11.3%	88.7%
Mechanical Engineering	6021	11.1%	88.9%
General Engineering	4699	15.3%	84.7%
Computer Science	3559	25.0%	75.0%
Computer Engineering	2318	14.9%	85.1%
Aerospace Engineering	2166	12.6%	87.4%
Physics	1444	11.4%	88.6%
Electrical Engineering	1413	12.7%	87.3%
Operations Research	836	33.7%	66.3%
Chemistry	804	30.0%	70.0%
Mathematics	665	42.7%	57.3%

Occupation	Population Size	Female	Male
Chemical Engineering	623	32.4%	67.6%
Materials Engineering	612	18.5%	81.5%
General Physical Science	597	27.8%	72.2%
General Natural Resources Management and Biological Sciences	428	47.2%	52.8%
Industrial Engineering	369	33.6%	66.4%
Civil Engineering	343	17.2%	82.8%
Psychology	325	43.7%	56.3%
Naval Architecture	286	13.3%	86.7%
Microbiology	186	42.5%	57.5%
General Health Science	186	53.2%	46.8%

Civilian S&E Workforce Across the Entire DoD

For perspective on the DoD laboratory workforce, the statistics for S&Es throughout DoD were evaluated. Table 10 provides the racial, ethnic and gender composition of the DoD civilian S&E workforce in 2013. Not all S&Es choose to identify with a race or ethnicity so totals below are slightly less than the 107,860 civilian S&Es across DoD.

Table 10 – DoD Civilian S&E Racial, Ethnic and Gender Diversity in 2013

Racial/Ethnic Group	Total	Male	Female
White	85,932	70,088	15,844
Asian	9,957	7,872	2,085
Black	6,314	4,008	2,306
Hispanic	5,186	4,018	1,168
Multiracial	1,484	1,054	430
American Indian/Alaska Native	555	419	136
Native Hawaiian/Pacific Islander	330	247	83

DoD S&Es are predominantly engineers (65.6%) with the balance being scientists (34.4%). Table 11 shows the gender composition of DoD S&Es: women comprise 20.0% of the total DoD S&Es. Of the total DoD engineering population 14.4% are female and of the total DoD scientist population, 30.8% are female. Similar to the data of 2011, there are more female scientists (11,453) than female engineers (10,161).

Table 11 – Percentage of DoD Civilian S&Es by Gender in 2013 - Total Population and Professional Career Field

Gender	Total	Engineer	Scientist
Male	80.0%	85.6%	69.2%
Female	20.0%	14.4%	30.8%

Table 12 details the racial and ethnic composition of all DoD S&Es. In 2011, Multiracial became a category for identification, and the number of S&Es self-identifying as Multiracial has increased since then by more than 53.6%, from 966 to 1,484.

Table 12 – Number of DoD Civilian S&Es by Racial Composition in 2013 - Total Population and by Field

Racial/Ethnic Group	Total	Engineer	Scientist
White	85,932	55,053	30,879
Asian	9,957	7,972	1,985
Black	6,314	3,709	2,605
Hispanic	5,186	3,741	1,445
American Indian/Alaska Native	555	350	205
Native Hawaiian/Pacific Islander	330	233	97
Multiracial	1,484	918	566

Table 13 addresses educational levels by gender for all of DoD. The highest degree held by most S&Es is Bachelor's (59.1%), followed by Master's (27.9%) and Doctorate (5.4%).

Table 13 – DoD S&E Education Levels by Gender, 2013

Educational Level	Total	Male	Female
HS Grad	5.0%	4.4%	1.1%
Some College	2.0%	1.6%	0.5%
Bachelor's Degree	57.5%	48.3%	10.9%
Master's Degree	26.8%	21.6%	6.3%
Ph.D.	5.8%	4.2%	1.3%

Table 14 shows the racial and ethnic composition of DoD S&Es by level of education. Items highlighted in light red indicate an increase from 2011 and items highlighted in dark red indicate an increase from both 2008 to 2011 and from 2011 to 2013. Multiracial was not a category in 2008.

Table 14 – DoD S&E Education Levels by Race/Ethnicity and Gender

	HS Grad			Some College			Bachelor's			Master's			Ph.D.			
Race	**M**	**F**	**Total**	**M**	**F**	**Total**	**M**	**F**	**Total**	**M**	**F**	**Total**	**M**	**F**	**Total**	**Total**
White	83.6	77.3	82.3	82	74.8	80.2	79.1	70.7	77.6	80.2	70.9	78.1	81.3	78.3	80.7	78.3
Asian	4.6	4.3	4.5	4.7	3.5	4.4	9.6	10.6	9.8	8.9	9.1	8.9	12.5	11.5	12.2	9.2
Black	5.8	10.3	6.7	6	12.2	7.6	4.5	10	5.5	4.9	12.7	6.7	2.5	5	3	5.8
Hispanic	4.2	5.5	4.5	5.3	6.8	5.7	5	6	5.2	4.4	4.7	4.5	2.4	2.8	2.5	4.8
AI/AN	0.5	0.7	0.5	0.6	0.4	0.5	0.4	0.6	0.5	0.3	0.5	0.4	0.5	0.3	0.4	0.4
Multiracial	1.2	1.6	1.3	1.2	2.2	1.4	1.1	1.7	1.2	1	1.7	1.2	0.9	1.9	1.1	1.2
NH/PI	0.2	0.4	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.2	0.4	0.3	0.1	0.1	0.1	0.3

All numbers are percentages